

CLAIMS

I claim:

- 5 1. A fluid flow bolt, comprising:
 a shaft having an elongate structure and a head;
 a plurality of channels extending into an outer portion of said shaft from a distal
end of said shaft having a depth D1; and
 a threading within said shaft having a plurality of threading grooves having a
10 depth D2 and threading ridges;
 said depth D1 is greater than said depth D2.
2. The fluid flow bolt of Claim 1, wherein said channels each have a V-shaped
15 cross sectional shape.
3. The fluid flow bolt of Claim 2, wherein said V-shaped cross sectional shape
has a rounded narrow portion and rounded broad ends.
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4. The fluid flow bolt of Claim 1, wherein said channels are equally spaced
apart within said shaft.
- 25 5. The fluid flow bolt of Claim 1, wherein said channels have a spiral pattern.

6. The fluid flow bolt of Claim 1, wherein said plurality of channels is comprised of a first channel, a second channel and a third channel.

5 7. The fluid flow bolt of Claim 6, wherein said channels are positioned 120 degrees with respect to one another.

10 8. The fluid flow bolt of Claim 7, wherein said channels each have a V-shaped cross sectional shape.

15 9. The fluid flow bolt of Claim 1, wherein said channels extend from said distal end of said shaft to near said head.

20 10. The fluid flow bolt of Claim 1, wherein said channels extend from said distal end of said shaft completely through said threading and away from said threading a finite distance.

25 11. The method of manufacturing a fluid flow bolt of Claim 1, wherein said depth D1 is at least 15 percent greater than said depth D2.

12. A method of manufacturing a fluid flow bolt, comprising the steps of:
(a) providing a cold forming die;

- (b) cold forming a bolt within said cold forming die having an elongate shaft, a head and a plurality of channels within said elongate shaft having a depth D1; and
- (c) threading a plurality of threading grooves within said shaft having a depth D2, wherein said depth D1 is greater than said depth D2.

13. The method of manufacturing a fluid flow bolt of Claim 12, wherein said plurality of channels form a spiral pattern.

14. The method of manufacturing a fluid flow bolt of Claim 12, wherein said depth D1 is at least 15 percent greater than said depth D2.

15. The fluid flow bolt of Claim 12, wherein said channels each have a V-shaped cross sectional shape.

16. The fluid flow bolt of Claim 15, wherein said V-shaped cross sectional shape has a rounded narrow portion and rounded broad ends.

17. The fluid flow bolt of Claim 12, wherein said channels are equally spaced apart within said shaft.

18. The fluid flow bolt of Claim 13, wherein said channels have a spiral pattern.

19. The fluid flow bolt of Claim 12, wherein said plurality of channels is comprised of a first channel, a second channel and a third channel.

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20. The fluid flow bolt of Claim 19, wherein said channels are positioned 120 degrees with respect to one another.

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